Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

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THE CLOT THICKENS: DOES THE JOHNSON & JOHNSON COVID-19 VACCINE INCREASE THE RISK OF THROMBUS IN A HYPERCOAGULABLE STATE?

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INTRODUCTION: The 2019 coronavirus disease (COVID-19) has hematologic manifestations in addition to respiratory. COVID-19 is associated with a state of hypercoagulability. Evidence shows correlation with degree of hypercoagulability and severity of disease. Patients with severe COVID-19 were reported to have venous and arterial thrombi causing organ dysfunction and death. There was an urgent need for vaccination against SARS-CoV-2. Companies, including Johnson & Johnson (J&J), have released their vaccine. Recently, the Centers for Disease Control and Prevention (CDC) and Food and Drug Administration (FDA) reported six cases of cerebral venous sinus thrombosis, which led to a pause in J&J vaccine administration. We present a case of a woman with antiphospholipid syndrome (APS) who developed acute deep venous thrombosis (DVT) after receiving the J&J vaccine while therapeutic with warfarin.

CASE PRESENTATION: Ms G is a 54-year-old black woman with history of APS and severe COVID-19 infection. Prior APS panel for lupus anticoagulant antibody (Ab) on initial and repeat testing was positive. Anticardiolipin and beta-2 glycoprotein Ab were negative. Her complication from APS included chronic left lower extremity DVT since 2018. She was compliant with warfarin. She received the J&J vaccine twenty days prior to the present visit. Fifteen days after receiving the vaccine, she developed bilateral lower extremity swelling and calf pain, left worse than right. On exam, vital signs were within normal limits. She had 1+ non-pitting edema and tenderness in her left calf, worse compared to the right. Complete blood count showed platelets 172x10^9/L (ref range: 167-378x10^9/L). INR 3.03, prothrombin time 33 seconds (ref range: 9.8-12.9). COVID-19 IgG titer 8.08 index (S/C) (ref range: 0-1.39). Heparin-induced thrombocytopenia (HIT) screen was negative. Venous doppler ultrasound showed an acute femoral-to-peroneal DVT in the right leg and a chronic femoral DVT in the left leg. Due to recent joint statement by the CDC and FDA advising against heparin in patients with new thrombi after receiving the J&J vaccine due to HIT-like behavior of these thrombi, the patient was treated with rivaroxaban and is currently doing well.

DISCUSSION: APS is an autoimmune disease that causes a chronic hypercoagulable state from antiphospholipid antibodies, which make patients prone to develop thrombi. Correlation has been shown between severity of COVID-19 and degree of inflammation. Severe illness leads to generation of excessive inflammatory cytokines and chemokines, endothelial dysfunction, and a host of other pathways to increase risk of thrombosis.

CONCLUSIONS: With the recent discovery of the J&J vaccine potentially creating a HIT-like state, the risk of developing DVT in a patient with known hypercoagulable state (such as APS and severe COVID-19) appears elevated. Due to this finding, we recommend caution in giving the J&J vaccine.

REFERENCE #1: Abou-Ismail, Mouhamed Yazan et al. "The hypercoagulable state in COVID-19: Incidence, pathophysiology, and management." Thrombosis research vol. 194 (2020): 101-115. doi:10.1016/j.thromres.2020.06.029

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